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Study of Final-State Radiation in Decays of Z Bosons Produced in pp Collisions at 7 TeV

CMS Collaboration ; Khachatryan, V ; Sirunyan, A M ; Tumasyan, A ; Amsler, C ; Canelli, M F ; Chiochia, V ; De Cosa, A ; Hinzmann, A ; Hreus, T ; Kilminster, B ; Lange, C ; Ngadiuba, J ; Pinna, D ; Robmann, P ; Ronga, F J ; Taroni, S ; Yang, Y ; et al

Abstract: The differential cross sections for the production of photons in $Z \rightarrow \mu + \mu - \nu$ decays are presented as a function of the transverse energy of the photon and its separation from the nearest muon. The data for these measurements are collected with the CMS detector and correspond to an integrated luminosity of 4.7fb^{-1} of pp collisions at $\sqrt{s} = 7\text{TeV}$ delivered by the CERN LHC. The cross sections are compared to simulations with *powheg* and *pythia*, where *pythia* is used to simulate parton showers and final-state photons. These simulations match the data to better than 5%.

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